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Postbuckling elastoplastic state analysis of three-dimensional bodies taking into account finite strains

Golovanov A., Sultanov L.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

A technique for analyzing the stress strain state of elastoplastic bodies taking into account large displacements, rotations, finite strains, and buckling is presented. The step-by-step loading method with formulation of the resolvent variation equation in the current configuration is used. The governing equations for elastoplastic bodies that connect the Jaumann derivative of the Cauchy-Euler stress tensor with the velocity strain are applied. The spatial discretization is based on the finite element method (FEM) in the framework of the polylinear three-dimensional isoparameteric approximation. The numerical solutions of the problems are given. © Allerton Press, Inc. 2008.

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